AN EMPIRICAL STUDY OF THE INTENTION TO USE ELECTRONIC GOVERNMENT IN MAJLIS PERBANDARAN SEBERANG PRAI, PENANG

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ABSTRACT

Electronic government is leading to changes in the way of life of community. For example, it results in improvements in the delivery of government services. Electronic government is designed to facilitate community interaction with government (G2C), which is what literatures perceive to be the primary goal of e-government. This paper reports the results of a survey on the intention of the government to use community websites with technology acceptance model (TAM), administered by questionnaires to 137 respondents among Internet users at Majlis Perbandaran Seberang Prai (MPSP), Penang. The results shows that 4.5% (R square = 0.045) of the variances in intention to use G2C websites index can be explained by perceived usefulness (PU) and perceived ease of use (PEU) 15.9% (R square = 0.159) of the variances in PU of G2C websites can be explained by PEU. Theoretically, this study has extended the usage of TAM towards e-government wings, in helping to understand and explain the intention to use in G2C websites' implementation in the Malaysian context.

Key words: Electronic government, technology acceptance model, perceived usefulness, perceived ease of use

1.0 INTRODUCTION

1.1 Background of Electronic Government (e-government)

The technologically based advancement in public-government communication is referred to as electronic government or e-government, in which technology or more specifically, the Internet is used to link the public to government services. The members of the public will be able to access certain services at the public's convenience and without the need to adhere to conventional office hours or a specific location. Joshua (2000) defined e-government as "the ability to obtain government services through non-traditional electronic means, enabling access to government information and the completion of government transactions on an "anywhere, any time" basis and in conformance with equal access requirements".

In the same context, Siefert and Petersen (2001) stated that e-government means different things to different people. It may be defined as "specific actions such as using a government kiosk to receive job information, applying for government service through a Web site or creating shared databases for multiple agencies. E-government is commonly known as automating the delivery of government services". Similarly, Atallah (2001) defined e-government as "the use of information technologies such as Wide Area Networks, The Internet, and mobile computing – by government agencies". As a consequence, its adoption is altering the fundamental relationship between the government on one hand and the public – citizens and businesses – on the other hand.

In a more recent study, Priya and Radhakrishnan (2002) defined e-government as "a form of e-business in government. It refers to the processes and structures pertinent to the delivery of electronic services to the public". They therefore stressed that hi-tech information and communication technologies (ICT) can make significant contribution to the achievement of a good governance model. Thus, ICT brings hope that government can transform their activities through the Web-enabled environment.

Bouras, Destounis, Garafalakis, Triantafillou, Tzimas and Zarafidis (1999) identified the primary aims of implementing e-government. Firstly, minimization of transportation, financial and human resources costs can be achieved through a process of avoiding the immediate contact between the service and citizens. Secondly, e-government will provide an immediate distribution of information and minimize the number of visits to the administration centers by decentralizing

and increasing the accessibility to the information. This will reduce the workload of the government employees.

Likewise, Van Hoffman (1999) stated that transforming the business of government means improving the delivery of services to citizens and viewing them as customers. This might mean less time spent standing in line. In addition to time savings to citizens, online transactions will also mean dramatic monetary savings for the government.

With the introduction of e-government, service delivery has become more convenient, dependable and less costly (Siefert et al., 2001). Further, e-government provides new opportunities to enhance governance, which can include improved efficiency, new services, increased citizen participation and an enhanced National Information Infrastructure. Similarly, Atallah (2001) highlighted the two effects of e-government. First, it transforms the operations of e-government. The provision of government goods and services is made quicker and cheaper, thus benefiting the citizens, as their needs are more likely to be met. It also benefits businesses, which become both consumers of government services and providers of goods and services for government. It also benefits the government itself through reduced costs and spending, which could require lower taxes to finance. The second effect of e-government is the transformation of governance – the introduction of a new relationship between citizens and the state in managing a country's affairs. The nature of governance defines expectations for how government should do business.

It is currently possible for citizens to access government information online. Federal, state and local governments send or receive hundreds of millions of individual communications every year. If even a small fraction of these communications could be transmitted electronically, the savings in printing, handling, and postage costs could be significant. In many cases, citizens may find electronic documents are more convenient than traditional paper documents. Electronic documents can, for example, be filed, reproduced, abstracted, and forwarded by pressing a key. The citizens often get tired and confused by the complexity of procedures, the time consuming operations and even the geographic dispersion of the offices and are forced to understand the structure and operation of the administration mechanism of government (Bouras et. al., 1999).

1.2 Background of the Government to Community Initiatives

Government to Community (G2C) initiative is designed to facilitate citizen interaction with government, which is what some observers perceive to be the primary goal of e-government. These initiatives attempt to make transactions, such as renewing licenses and certifications, paying taxes, and applying for benefits, less time consuming and easier to carry out. G2C initiatives also often strive to enhance access to public information through the use of dissemination tools such as Websites or kiosks (Siefert et al., 2001).

They continued to say that one of the goals of implementing these initiatives should be to create a one stop shopping site where citizens can carry out a variety of tasks, especially those that involve multiple agencies, without requiring the citizen to initiate contacts with each agency individually. Thus, G2C initiatives may facilitate citizen-to-citizen interaction and increase citizen participation in government by creating more opportunities that overcome possible time and geographical barriers, thereby connecting citizens who may not ordinarily come into contact with one another. Most G2C initiatives can be seen from the establishment of an official Website as a dissemination tool created by a government organization as a method of delivering government services to the citizens.

The government needs to swiftly enter the digital world. The main step is to have an e-vision, which is an IT vision for a country in placing e-government in context. For example, Dubai has launched an "E-government initiatives" with the aim of overhauling all government services offered to businesses and individuals. In addition, one of its initiatives is a USD300 million Internet city aimed at attracting international IT global companies (Atallah, 2001). Additionally, Egypt has developed a national communications and information technology (CIT) plan, while Jordan has launched a 5-year e-government initiative proposing major programs of work that will yield direct results for government, businesses and citizens.

Wimmer (2002) revealed that e-government is still in its infancy. Many countries have already provided information and access points to their administrations. In most cases, the concept is realized via a simple, static Hypertext Markup Language (HTML) Websites. The vision of e-government goes far beyond that. The German Memorandum of 'Electronic Government as Pivotal Vision to Modernize Governance and Government was presented to the public in 2001.

Yet, a year after that, Germany's public administrations are still looking for integrated developments.

Interestingly, in 2002 Forrester Research has estimated that 15 percent of federal, state and local fees and taxes will be collected online by 2006. The technology research and consulting firm also predicts that nearly 14,000 online service applications will roll out across the United States by 2006. In addition, Gartner Group predicts that combined U.S. federal, state and local e-government spending will most likely exceed USD6.2 billion by 2005 (Kooser, 2002).

2.0 LITERATURE REVIEW

The innovation of the World Wide Web has made it the most recent communication and distribution channel for the government. The Web also presents new opportunities and challenges for the government to establish, build and manage citizen/community relationship. However, e-government is still a relatively new phenomenon in Malaysia; thus, research in the area is still limited in depth and scope.

Locally, Othman, Said and Nasir (2001) investigated 144 local authorities in Malaysia, in determining the existence of the Websites, and the type and extent of information available in the Websites. They revealed that only 47 or 32 percent of the local authorities in Malaysia have Websites, and 44 of them were accessible. 86 percent of these Websites provided corporate information, 84 percent provided strategic direction, 73 percent provided organizational charts, 70 percent described the functions and type of services provided, 10 percent described the awards, current developments, projects, progress in information technology, and opportunities to operate within the localities; and only 11 percent of the Websites accessed provided their financial backgrounds.

The drivers of traffic to G2C Websites are not well known. Obtaining and retaining visitors to G2C Websites continue to challenge the government. To increase our understanding in this area, this study is intended to provide more insight into the factors influencing the 'intention to use' G2C Websites.

DeLone and McLean (1992) contended that the traditional notion of 'use' (i.e. physically using technology) is not an appropriate dependent variable. They argued that individuals have 'no option' but to use the system in order to perform

their job functions. In contrast to DeLone et al.'s contention, the community at large is not forced to use G2C Websites, for example in paying taxes online, because they still have the option to pay at the government's physical office.

Therefore, this study looked at the intention to use of G2C Websites as the dependent variable. This was done by proposing a version of Technology Acceptance Model and by empirically validating this model. The original version of the Technology Acceptance Model (TAM) is shown in Figure 1 and was put forward by Davis (1989) and Davis, Bagozzi and Warshaw (1989). TAM adopts the well-established causal chain (beliefs → attitude→ intention→ behaviour) that was put forward by social psychologists Fishbein and Ajzen (1975), and which has become known as the Theory of Reasoned Action (TRA). Based on certain beliefs, a person forms an attitude about a certain object, on the basis of which he or she forms an intention to behave with respect to that object. The intention to behave is the sole determinant of actual behaviour (Van Der Heijden, 2003). Researchers on TRA and TAM have consistently found strong empirical support for these relationships: attitudes and intention can accurately explain and predict actual behaviour.

Davis adapted the TRA by developing two key beliefs that specifically account for usage: Perceived usefulness (PU) and perceived ease of use (PEU). Davis (1989) defined PU as "the degree to which a person believes that using a particular system would enhance his or her productivity" and PEU as "the degree to which a person believes that using a particular system would be free of effort". PEU and PU have been found to have some impact on technology usage (Tham, Dahlan & Ramayah, 2003; Ramayah, Siron, Dahlan & Mohamad, 2002; Ramayah & Koay, 2002; Jantan, Ramayah & Chin, 2001; Adam, Nelson & Todd, 1992; and Davis, 1989). In addition, an individual may adopt a technology if he or she perceives it as convenient, useful and socially important even though they do not enjoy using the technology (Saga & Zmud, 1994).

Legris, Ingham and Collerette (2002) conducted a critical review of TAM, by looking at 80 articles published from 1980 to the first half of 2001. Out of the 80 consulted, 22 were kept for analysis. The criterion of the article selection: TAM is used in an empirical study; the integrity of TAM is respected; the research methodology is well described; and the research results are available and complete. In their findings, Legris et al. (2002) proved TAM to be useful in helping to understand and explain use behaviour in IS implementation.

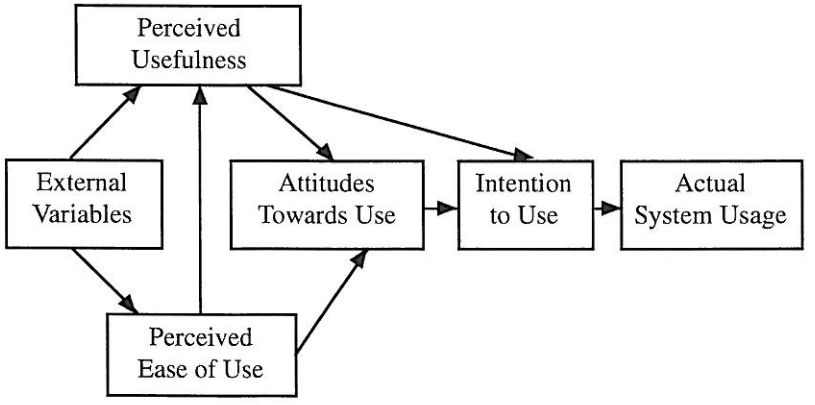

Figure 1 : Technology Acceptancce Model

Source: Davis, 1989 & Davis et al, 1989

In contrast, Van Der Heijden (2003) empirically investigated an extension of TAM to explain the individual acceptance and usage of Websites. He examined perceived ease of use, usefulness, enjoyment and their impact on attitude towards using, intention to use, and actual use. The study also introduced a new construct 'perceived visual attractiveness' of the Website and discovered that it influenced usefulness, enjoyment, and ease of use.

TAM is also widely used by the local researchers. Basyir (2000) adopted this model to study the various factors associated with acceptance of Internet shopping behavior. Jantan et al. (2001) used TAM to study the various factors influencing personal computer acceptance by small and medium sized companies in Malaysia. Ndubisi, Jantan and Richardson (2001) investigated whether TAM is valid for entrepreneurs in Malaysia in determining their usage. Fok (2001) adapted TAM to study on self-efficacy and its determinants as factors that are affecting perceived ease of use, perceived usefulness and the use of the Internet. Ramayah, Siron, Dahlan and Mohamad (2002) used TAM to predict technology usage among owners/managers, while Ramayah and Koay (2002) used TAM to predict intention to use Internet banking in Malaysia. Further, Tham et al. (2003) adapted this model and included perceived Web security and perceived privacy loss in investigating Web-based online transaction intent in Malaysia. More recently, Choong (2003) used TAM to assess owners/managers' intention to adopt Web-based Supply Chain Management in Small and Medium Industrial (SMI) organizations.

2.1 Research Framework

This proposed research model was based on TAM (Davis, 1989). The main constructs of this model are PU and PEU. Figure 2 depicts the theoretical framework proposed for this study.

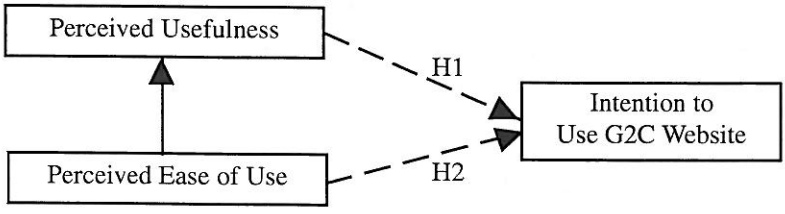

Figure 2 : Research Framework

2.2 Hypotheses

Hypotheses in this study are developed based on the theoretical framework and literature reviews discussed as the purpose is to identify the factors influencing the intention to use G2C Websites. Davis et al. (1989) revealed that perceived usefulness has strong relationship with system usage. Tham et al. (2003) studied the impact of perceived usefulness and ease of use in Web-based online transaction intention in Malaysia, while Van Der Heijden (2003) investigated an extension of TAM to explain the usage of Websites in The Netherlands. In sum, this study hypothesized that usefulness and ease of use influence G2C Website usage directly through intent. Thus, H1 and H2 are derived as follows:

H1: Perceived usefulness positively influences the community's intention to use the G2C Website

H2: Perceived ease of use positively influences the community's intention to use the G2C Website

Previous TAM research demonstrates strong empirical support for a positive relationship between perceived ease of use and perceived usefulness. In a Website environment we also expect this relationship to hold. In other words, the easier Website is to learn, use or navigate, the more useful it would be perceived (Van Der Heijden, 2003). This study sought to investigate whether the easier the G2C Website is to use, the more useful it would be perceived by the community. Thus, H3 is derived as follows:

H3: Perceived ease of use positively influences perceived usefulness of the G2C Website.

3.0 METHODOLOGY

The questionnaire was adapted from David et al. (2001), Raganathan and Ganapathy (2002) and Tham et al. (2003) and it was modified accordingly to suit this research context. David et al.'s (2001) questionnaire studied the effect of Web security; Raganathan et al.'s (2002) questionnaire uncovered the key dimensions of Websites, which include information content, Web design, security and privacy; while Tham et al.'s (2003) questionnaire investigated the impact of PU, PEU, perceived web security (PWS) and perceived privacy loss (PP) on online transactions.

Random sampling technique was used, (as the targeted samples are the Internet users (individuals) in Penang), in which questionnaires were distributed to them. Questionnaires were distributed via e-mails and postal mail. In addition to that, questionnaires were also handed personally to the respondents within Majlis Perbandaran Seberang Prai (MPSP). For questionnaires that were delivered by postal mail, a self-addressed, stamped envelope was included to encourage the return of the questionnaires. The respondents were selected from the list of MPSP's taxpayers who have been paying their assessment through Internet.

The research was designed by using a questionnaire, which comprised of four sections. The final part consists of Section A (7 questions – perceived usefulness), B (7 questions- perceived ease of use) and C (6 questions – intention to use). The responses were recorded on a five-point scale in which "1" indicated "strongly disagree" and "5" indicated "strongly agree". In Section D, questions 34 to 40 were used to determine the respondent's demographic background in terms of gender, race, age, education, type of industry they are working, position and annual income.

4.0 RESULT AND DISCUSSION

The response rate for the study is about 31.1% of sample drawn. Out of 137 respondents, 56.2 percent of them were male and 43.8 percent were female. The majority of the respondents (59.1 percent) are between 21 – 30 years of age. The minority is from the age group of less than 20 years or 1.5 percent. Other respondents are 21.2 percent from 31-40 years, 15.3 percent from 41-50 years, and 2.9 percent of them are more than 50 years old. In total, majority of the respondents are educated, only 6.6 percent has High School as the highest qualification. Others are 2.2 percent with PhD, 16.1 percent with Master degree,

59.1 percent with Bachelor degree and 16.1 percent Diploma holders. 24.1 percent of them are students, and others are all working adults, of whom 18.2 percent are from top management, 30.7 percent from middle management, 5.8 percent are first level supervisor, 16.8 percent are non management or professional staffs and 4.4 percent others.

The Reliability test was run to determine whether the factors were significantly consistent to measure. Table 1 shows the results of the reliability test. All the factors, which were reduced, are highly reliable and can be used to perform further analysis. The reliability coefficient (Cronbach's alpha) values ranged from 0.6321 to 0.8669. None of the reliability alphas were below the cut-off point of 0.60, which is generally considered to be the criterion for demonstrating internal consistency of new scales (Nunnally, 1978).

Table 1: Cronbach's Alpha Coefficient

Variables	Number of items	Cronbach's Alpha
Perceived Usefulness	7	0.9343
Perceived Ease of Use	7	0.8101

Descriptive data analysis is shown in Table 2 below. The mean and standard deviation were derived from the preference of the survey responses. The respondent preference were tapped on a five point Likert scale with 'strongly agree' at the tail end of five and 'strongly disagree' at the other tail end.

Table 2: Descriptive Statistics

Variables	Mean	Standard Deviation
Perceived Usefulness	4.33	0.76
Perceived Ease of Use	3.78	0.86
Intention to Use G2C Websites	3.36	1.25

In order to solve this issue, to verify the hypotheses and to answer the research questions as proposed earlier, multiple regression tests were run to test the following hypotheses.

Table 3 displays the summary of regression analysis for H1 and H2. F-value of 3.159 is significant at 0.05 levels. The Durbin Watson value of 1.698 is above 1.5 and below 2.5 indicating no auto-correlation problem. The R square of 0.045 implies that only 4.5% of the variances in the intention to use G2C Websites Index can be explained by the two independent variables. The result shows that perceived ease of use has a negative influence on the intention to use G2C Websites Index ($t = -2.44$, $p < 0.05$). The following result also shows that perceived usefulness does not significantly influence the intention to use the G2C websites ($t = 1.515$, $p > 0.05$). Thus, the perceived ease of use is the only significant independent variable. Hence, H1 is rejected and H2 is accepted.

Table 3: Summary for Regression Analysis for H1 and H2

Variables Coefficients	Standardized	t value
Constant		5.468*
Perceived Usefulness	0.139	1.514
Perceived Ease of Use	-0.225	-2.444*
R-Square	0.045	
Adjusted R-square	0.031	
F Statistics	3.159*	
Durbin Watson	1.698	

Dependent Variable: Intention to use G2C Websites
*Significant at the 0.05 level

Rejecting H1 implies that G2C Websites are still not an effective channel to improve their knowledge, or communicate with government. They still prefer to go to the physical government's locations or calling via phone calls or mails instead of using the G2C Websites.

The second hypothesis result also revealed that perceived ease of use negatively influences the intention to use G2C Websites. Internet users view that using G2C Websites should be free of effort. In other words, a simpler design G2C Website is preferred, since it will lead to easy navigation, thus, less time is taken in acquiring information or services.

Table 4 displays the summary of the regression analysis for H3. In this case, the dependent variable is replaced with perceived usefulness. The Durbin Watson value of 2.246 is above 1.5 and below 2.5 indicating no auto-correlation problem.

The R square of 0.159 implies that only 15.9% of the variances in the perceived usefulness Index can be explained by perceived ease of use as the independent variable. The result shows that perceived ease of use has a positive influence on perceived usefulness of G2C Websites ($t = 5.058$, $p < 0.05$). Thus, H3 is accepted.

Table 4: Summary for Regression Analysis for H3

Variables	Standardized Coefficients	t value
Constant		11.152*
Perceived Ease of Use	0.399	5.058*
R-Square	0.159	
Adjusted R-square	0.153	
F Statistics	25.587*	
Durbin Watson	2.246	

Dependent Variable: Perceived Usefulness
*Significant at the 0.05 level

Perceived ease of use positively influences perceived usefulness of G2C Website. The result was consistent with the prediction, where previous TAM research demonstrated strong empirical support for a positive relationship between perceived ease of use and perceived usefulness. Thus, the results hold in G2C Website environment. In other words, the easier Website is to learn, use or navigate, the more useful it would be perceived (Van der Heijden, 2003).

5.0 CONCLUSION

The importance of G2C Websites cannot be denied. Theoretically, this study has extended the usage of TAM towards e-government wings, in helping to understand and explain the intention to use in G2C Websites' implementation. The study confirmed that the intention to use G2C Websites was significantly influenced negatively by perceived ease of use by the users. Practically, this study implied that the Malaysian Government therefore should be very cautious in addressing G2C Websites' issue. As perceived ease of use negatively influences intention to use, the government should design a simpler but attractive Website.

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